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In the Specification:

[0036] FIG. 4 discloses, in a view from the top, the overall structure of the wood-handling apparatus 100. The wood-handling apparatus 100 preferably includes a live deck 102 for automatically supplying workpieces 104 to the infeed assembly 106. The infeed assembly 106 supplies workpieces 104, one at a time, in a linear feed, to the cutting assembly 200. The out-feed assembly 110 moves finished components 112 away from the cutting assembly ~~108~~ 200.

[0038] Cutting element 202 is mounted on saw-frame 204 and is movable in several directions. Element 202 is rotatable about its vertical axis, allowing motion of the element 202 as shown by arrow A1. The cutting element 202 is shown in its upright or home position ~~204~~ in FIG. 5B. The cutting element 202 also moves vertically, allowing movement as indicated by the arrow Z1. The cutting element 202 is movable transversely, across the workpiece 104, as indicated by arrow T1. The cutting element 202 is finally rotatable about axis C1, allowing movement as indicated by arrow ~~32~~ B1. Movement of the workpiece along path L is controlled by linear feed assembly 300, the infeed feeder 302 and outfeed feeder 304 allowing lumber movement as indicated by arrow LM.

[0040] The specific arrangement of the elements of the cutting assembly 200 is not important as long as each of the relative motions of the cutting element 202 is achieved. In a preferred embodiment, the saw frame 204 is mounted to a stable object, such as a saw enclosure 206. In this case, the frame 204 is slidably mounted to transverse rails 208. The frame 204 is movable in the transverse direction, along arrow T1, by movement along a ball-screw shaft (not shown) which interacts with aperture 210 in a manner known in the art. Piston-cylinder assembly 212 controls the movement of the cutting element 202 in the vertical plane, Z1. Rotation of the cutting element 202 is controlled by servomotor and pulleys 214 allowing motion indicated by arrow B1. Similarly, rotation about the vertical pivot, movement along line A1, is controlled by an actuator ~~217~~ 216. Note that in the preferred embodiment, movement in the transverse direction moves actuators 212, 214, and 216 along with all of frame 204. This arrangement can be modified as desired as long as movement is allowed in the desired directions. Further, the preferred embodiment utilizes

convenient actuator mechanisms, but any means known in the art may be used to effect the various movements of the cutting elements.

[0042] The linear feeder 300 further comprises sensors (not shown) for sensing the presence of a workpiece and locating the end thereof. Use of such sensors is known in the art. The upper components 306 and 308, seen in detail FIG. 6, have belts that press against the lumber and grip it against the lower components 310 and 312. The drive mechanism for the belt is a servomotor with a measuring device or encoder, that measures the length of the workpiece as it feeds the lumber. Other drive mechanisms 324 and encoders 322 may be used, as are known in the art. The two units 302 and 304 are capable of working together, moving a single workpiece at the same rate, or independently. Independent functionality is necessary since a workpiece may be cut and the upstream piece 326 ~~need~~ needs to be moved back out of the way to allow movement of downstream piece 328 for further cutting. The finished segment 328 can then be moved downstream to the out feed ~~table 112~~ assembly 110. The feeder units 302 and 304 act to maintain the workpiece stable during cutting.

[0045] The cutting assembly and roller feed assemblies are operably connected to the computer 400 through appropriate electronics as are known in the art. The computer enables the user to input the desired lengths of wood product needed for a particular job. The computer may optimize the cuts made in the wood product through an appropriate program. Further, the computer controls the cutting unit and the driving unit. The computer receives input signals from at least the position sensors and encoders. The computer is operably connected to activate and control the driver assembly and pressure assembly for positioning the workpieces and the cutting unit. The computer receives input from the measuring assembly to determine the length of the workpiece and to determine the appropriate positioning of the workpiece in selecting the locations of the cuts to be made. The computer may optimize the cuts in the product by a method such as the one disclosed in U.S. Pat. No. ~~5,44,635~~ 5,444,635 to Blaine, which is incorporated herein by reference.

[0046] It is possible to add a second cutting ~~assembly~~ blade 201 to increase productivity. The second cutting ~~assembly~~ blade 201 is similar to the first, ~~200~~ 202, but preferably below-mounted such that the cutting blade moves upward to execute a cut. The second cutting ~~assembly~~ blade 201 can be used to execute a cut while the first ~~assembly 200~~ blade 202 is positioning itself.

[0047] The invention can also be combined with a marking assembly 500 as ~~in~~ is known in the art, which can mark workpieces as to their size, shape, dimensions, or any other preferred indication.